

U.S. Serial No. 10/707,032

3

BOE 0440 PA

AMENDMENTS TO THE CLAIMS

In the set of claims of the Application, please amend, retain, or cancel each claim as hereinafter indicated.

1. (Currently amended) A framework for a deployable antenna, said framework comprising:

a hub;

a plurality of elongate ribs each having a proximal end and a distal end; and

a matching plurality of foldable resilient members interconnecting the proximal ends of said elongate ribs to said hub;

wherein at least one of said hub, said elongate ribs, and said foldable resilient members comprises non-metallic fibers embedded within a resin matrix; said non-metallic fibers comprise carbon in its allotropic form of graphite; and said resin matrix includes at least one type of resin selected from the group consisting of an epoxy resin, a cyanate ester resin, and a thermoplastic resin.

2. (Original) A framework according to claim 1, wherein said deployable antenna is a mesh reflector type antenna.

3. (Original) A framework according to claim 1, wherein said hub comprises metal.

4. (Currently Amended) A framework according to claim 1, wherein said hub ~~comprises non-metallic fibers embedded within a resin matrix is structurally adapted for being mounted on at least one space travel vehicle selected from the group consisting of an orbiter, a satellite, a spacecraft, a space probe, a spaceship, a space shuttle, and a space station.~~

5. (Currently Amended) A framework according to claim 4 for a deployable antenna, said framework comprising:

a hub;

a plurality of elongate ribs each having a proximal end and a distal end; and

a matching plurality of foldable resilient members interconnecting the proximal ends of said elongate ribs to said hub;

U.S. Serial No. 10/707,032

4

BOE 0440 PA

wherein said hub comprises non-metallic fibers embedded within a resin matrix; said non-metallic fibers comprise carbon in its allotropic form of graphite[[.]]; and said resin matrix includes a type of resin selected from the group consisting of an epoxy resin, a cyanate ester resin, and a thermoplastic resin.

6. (Currently Amended) A framework according to claim [[1]] 5, wherein said hub is structurally adapted for being mounted on a space travel vehicle selected from the group consisting of an orbiter, a satellite, a spacecraft, a space probe, a spaceship, a space shuttle, and a space station.

7. (Canceled)

8. (Currently Amended) A framework according to claim 7 for a deployable antenna, said framework comprising:
a hub;
a plurality of elongate ribs each having a proximal end and a distal end; and
a matching plurality of foldable resilient members interconnecting the proximal ends of said elongate ribs to said hub;

wherein each of said elongate ribs comprises non-metallic fibers embedded within a resin matrix; said non-metallic fibers comprise carbon in its allotropic form of graphite[[.]]; and said resin matrix includes a type of resin selected from the group consisting of an epoxy resin, a cyanate ester resin, and a thermoplastic resin.

9-10. (Canceled)

11. (Currently Amended) A framework according to claim 10 for a deployable antenna, said framework comprising:
a hub;
a plurality of elongate ribs each having a proximal end and a distal end; and
a matching plurality of foldable resilient members interconnecting the proximal ends of said elongate ribs to said hub;

U.S. Serial No. 10/707,032

5

BOE 0440 PA

wherein each of said foldable resilient members comprises non-metallic fibers embedded within a resin matrix; said non-metallic fibers comprise carbon in its allotropic form of graphite[[,]]; and said resin matrix includes a type of resin selected from the group consisting of an epoxy resin, a cyanate ester resin, and a thermoplastic resin.

12. (Currently Amended) A framework according to claim [[1]] 11, wherein each of said foldable resilient members has a shape substantially resembling a hollow tube segment.

13. (Original) A framework according to claim 12, wherein said hollow tube segment has a cylindrical wall including at least one elongated slot defined therethrough.

14-19. (Canceled)

20. (Currently Amended) A framework according to claim 18 for a deployable antenna, said framework further comprising:

a hub;

a plurality of elongate ribs each having a proximal end and a distal end;

a matching plurality of foldable resilient members interconnecting the proximal ends of said elongate ribs to said hub, wherein each of said foldable resilient members is capable of storing strain energy whenever forcibly folded and also releasing said strain energy whenever subsequently permitted to elastically unfold;

a matching plurality of elongate outriggers each having a tension-bearing end, a load-bearing end, and a middle section interconnecting said load-bearing end to said tension-bearing end, wherein the middle sections of said elongate outriggers are pivotally mounted on [[said]] the distal ends of said elongate ribs; and

a removable restraint for collectively holding said elongate ribs in a captured position wherein said foldable resilient members are forcibly folded such that said distal ends of said elongate ribs are thereby proximately situated together;

wherein said strain energy drives automatic deployment of said deployable antenna, whenever said removable restraint is removed from said elongate ribs, by forcibly

U.S. Serial No. 10/707,032

6

BOE 0440 PA

unfolding said foldable resilient members in an elastic manner such that said elongate ribs are thereby splayed apart in a released position.

21. (Original) A framework according to claim 20, wherein each of said elongate outriggers comprises non-metallic fibers embedded within a resin matrix.

22. (Original) A framework according to claim 21, wherein said non-metallic fibers comprise carbon in its allotropic form of graphite, and said resin matrix includes a type of resin selected from the group consisting of an epoxy resin, a cyanate ester resin, and a thermoplastic resin.

23. (Original) A framework according to claim 20, said framework further comprising a matching plurality of tensioning cables attached to the tension-bearing ends of said elongate outriggers.

24. (Currently Amended) A framework according to claim 23, said framework further comprising radial catenary cables, substantially circumferential catenary cables, tie-down cables, and a net[,];

wherein said radial catenary cables, said substantially circumferential catenary cables, and said tie-down cables cooperatively suspend said net between the load-bearing ends of said elongate outriggers whenever said elongate ribs are in said released position and said tensioning cables are sufficiently tensioned.

25. (Canceled)

26. (Currently Amended) ~~A framework according to claim 25 for a deployable antenna, said framework comprising:~~

a hub;
a plurality of elongate ribs each having a proximal end and a distal end; and
a matching plurality of foldable resilient members interconnecting the proximal ends of said elongate ribs to said hub;

U.S. Serial No. 10/707,032

7

BOE 0440 PA

wherein said deployable antenna includes a mesh attachable to a net and comprising a flexible material suited for reflecting electromagnetic waves within the radio frequency spectrum; and said flexible material comprises woven, gold-plated molybdenum wire.

27. (Canceled)

28. (Currently Amended) A framework according to claim 27 for a deployable antenna, said framework comprising:

a hub;

a plurality of elongate ribs each having a proximal end and a distal end; and a matching plurality of foldable resilient members interconnecting the proximal ends of said elongate ribs to said hub;

wherein each of said foldable resilient members comprises non-metallic fibers embedded within a resin matrix; said non-metallic fibers comprise carbon in its allotropic form of graphite[[],]; and said resin matrix includes a type of resin selected from the group consisting of an epoxy resin, a cyanate ester resin, and a thermoplastic resin; and

wherein each of said foldable resilient members is capable of storing strain energy whenever forcibly folded and also releasing said strain energy whenever subsequently permitted to elastically unfold.

29-34. (Canceled)

35. (Currently Amended) A deployable antenna according to claim 34[[],] comprising:

a framework including a hub, a plurality of elongate ribs each having a proximal end and a distal end, and a matching plurality of foldable resilient members interconnecting the proximal ends of said elongate ribs to said hub; and

a mesh suspended from the distal ends of said elongate ribs;

wherein said mesh comprises a flexible material suited for reflecting electromagnetic waves within the radio frequency spectrum; and said flexible material comprises woven, gold-plated molybdenum wire.

U.S. Serial No. 10/707,032

8

BOE 0440 PA

36-39. (Canceled)

40. (Currently Amended) A satellite according to claim 39[[,]] comprising:
a body; and
a deployable antenna mounted on said body and including a framework and a
mesh;

wherein said framework includes a hub, a plurality of elongate ribs each having a proximal end and a distal end, and a matching plurality of foldable resilient members interconnecting the proximal ends of said elongate ribs to said hub;

wherein said mesh is suspended from the distal ends of said elongate ribs; said mesh comprises a flexible material suited for reflecting electromagnetic waves within the radio frequency spectrum; and said flexible material comprises woven, gold-plated molybdenum wire.

41. (Currently Amended) A method for stowing and deploying a rib-supported mesh reflector antenna, said method comprising the steps of:

obtaining a hub, a plurality of elongate ribs each having a proximal end and a distal end, and a matching plurality of foldable resilient members; wherein at least one of said hub, said elongate ribs, and said foldable resilient members comprises non-metallic fibers embedded within a resin matrix; said non-metallic fibers comprise carbon in its allotropic form of graphite; and said resin matrix includes at least one type of resin selected from the group consisting of an epoxy resin, a cyanate ester resin, and a thermoplastic resin;

interconnecting the proximal ends of [[a]] said plurality of elongate ribs to a common said hub with [[a]] said matching plurality of foldable resilient members;

suspending a commonly held reflective mesh from the distal ends of said elongate ribs;

applying a removable restraint to said elongate ribs to thereby hold and stow said elongate ribs in a captured position wherein said foldable resilient members are forcibly folded such that said distal ends of said elongate ribs are proximately situated together; and

removing said restraint from said elongate ribs so that strain energy, stored within said foldable resilient members when forcibly folded, forcibly unfolds said foldable resilient members in an elastic manner such that said elongate ribs are thereby splayed apart in a released position and said reflective mesh is automatically deployed.